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THE GENUS EPHORON*

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Williamson (1802) described the white fly *Ephoron leukon*. From his description of the insect and its habits, recent workers have been able to identify the species correctly. Hagen (1863) suggested that *Baetis alba* Say is a synonym of *E. leukon* Williamson. Eaton (1871, p. 124) was undecided as to the identity of *E. leukon*. In 1883 (p. 47), however, he indicated that *leukon* is a synonym of *albus* Say, which he considered to be a member of the genus *Polymitarcys*. This genus he had erected in 1868, employing *Ephemera virgo* Oliver as the genotype.

McDunnough (1926) showed that both the generic and trivial names of *Ephoron leukon* are valid, and thus *Ephoron* should supersede the generic name *Polymitarcys*. He also showed, as has been confirmed subsequently by other workers, that *album* Say although belonging to *Ephoron* is not a synonym of *E. leukon* Williamson. Ulmer (1932, 1932-33) considered both *Ephoron* and *Polymitarcys* to be valid genera with *leukon* Williamson as the genotype of *Ephoron* and *virgo* Oliver as the genotype of *Polymitarcys*. Traver (1935), however, considered *Polymitarcys* as a synonym of *Ephoron* and indicated *E. virgo* Oliver as the genotype. Lestage (1938) has reviewed the entire problem at some length, but, due to the lack of material, did not arrive at any definite conclusion. In order to clarify the situation there are two questions that should be answered:

1. What are the correct genotypes of (a) *Polymitarcys* and (b) *Ephoron*?
2. Is *Polymitarcys* a synonym of *Ephoron*?

When he erected *Polymitarcys* Eaton (1968, p. 86) made *P. virgo* Oliver the genotype. Therefore *P. virgo* is the type by original designation.

Williamson (1862, p. 71) in describing *Ephoron* did not designate a type but since only one species, *leukon*, was included in the original article, it automatically becomes the genotype according to the International Rules of Zoological Nomenclature.

Regardless of the subsequent fate of these two genera, the species mentioned above remain the respective genotypes, and *virgo* can not be considered the genotype of *Ephoron*.

McDunnough (1926, p. 184) wrote: "*Ephoron* Will. will supersede *Polymitarcys* Eaton as there seems little doubt from Williamson's account of the habit of the 'White Fly' that he was dealing with a species of this genus." All American workers have accepted McDunnough's conclusions.

Ulmer (1932, p. 209), however, wrote: "McDunnough will den Namen *Polymitarcys* Etn. ersetzen durch dem alteren Namen *Ephoron* Will.; das ist nicht notig, wenn man die hier hergehorigen nordamerikanischen Arten generisch von den ubrigen trennt, also beide Gattungen bestehen lasst, wie ich vorschlagen mochte; bei *Polymitarcys* ist die A_1 des Vorderflugels gegabelt, zweiastig, und die Interkalaraden liegen zwischen diesen 2 Asten; dagegen ist bei *Ephoron* die A_1, normal, ungegabelt und die Interkalaraden liegen zwischen

*Without the courtesy of research facilities at the Amer. Mus. Nat. Hist., this work could not have been accomplished. My sincere thanks to the Museum and in particular to Dr. Frank E. Lutz, Curator of Entomology.

A_1 und A_2; zudem ist *Ephoron* durch sehr stork vergrosserte Augen des ♂ von *Polymitarcys* verschieden." Ulmer thus feels that both genera are good.

Of the generally accepted valid species that have been placed in these two genera, the nymphs of five are known. Ide (1935) has figured and described the ♂ nymph of *leukon*. *E. album* nymphs of both sexes are in the author's collection. Eaton (1883-88, pl. 28), Vayassiere (1882, figs. 9, 11, 12) and Schoenemund (1930, figs. 119, 120) have described and illustrated the nymph of *virgo* Oliver. Tiensuu (1935, fig. 5) has described the nymph of *ladogensis* from Finland, while Ueno (1931, fig. 1) has figured and described a species from Japan. Careful, detailed comparison of *leukon* and *album* nymphs with the descriptions and figures of the other three species leaves no doubt that the differences between the species are very small and certainly of not more than specific rank. The sixth gill of *virgo* as illustrated by Eaton and Schoenemund differs from all other four species. Vayassiere (1882), however, has shown the gill of *virgo* to be similar to that of the other species. Apparently Eaton's delineator erred and Schoenemund has followed him.

The adults are better known than the nymphs, but even here most species are known from only a few individuals. In those species where adequate material has been studied (i.e., *album, leukon, virgo,* and *savignyi*) there appears to be considerable individual variation in the cubital area of the fore wing (the A_1-A_2 area of Ulmer). A detailed comparison of the eyes, legs, wings, genitalia, cerci, general configuration, size and coloration of *E. album* and *E. leukon* with other species that have been placed in *Polymitarcys* (i.e., *virgo, ladogensis, savignyi, annandalei, indicus*) shows that with the exception of the eyes and the cubital area of the wings, all other characters exhibit only specific differences. In fact, if it were not for the size and coloration, it would be impossible to separate individuals of these various species.

As mentioned above, the cubital area of the wing is highly variable. Typically we find in this area a number of long, longitudinal, nearly parallel intercalaries. Their distal ends reach the wing margin but their proximal ends terminate in the membrane and are attached to each other or to the major veins by cross veins. From the most posterior of these longitudinal intercalaries a number of short, secondary intercalaries arise and run to the anal margin of the wing. As in all members of the Ephemeroidea, these species have the Cu_2 distally diverging strongly from the Cu_1. Since the long intercalaries lie parallel to the Cu_1 they therefore are almost at right angles to the Cu_2. Between the bases of these intercalaries and the Cu_2 there is usually an accessory vein that parallels the Cu_2. It extends inward from the margin of the wing and sometimes, as in *indica* and *annandalei*, is attached to the Cu_1. In others such as *album* and *leukon*, it usually does not reach the Cu_1 but is attached to one of the longitudinal intercalaries. Thus this vein which is Ulmer's fork of his A_1 is present in the distal edge of the fore wings of all species but may be lacking proximally in some species. Careful study of actual specimens shows that it is not a true fork of the Cu_1 (A_1) but actually just another secondary intercalary that sometimes is attached to the Cu_1. If the attachment or nonattachment of this vein to the Cu_1 is considered of generic value, then some specimens of both *leukon* and *album* will belong to *Ephoron* and others collected from the same nuptial swarm will belong to *Polymitarcys*.

The differences in size of the eyes of various species and consequent varying of the relative distance between the eyes are also of only specific value. A parallel condition is found in *Potamanthus, Hexagenia,* and *Baetis*.

In addition to the evidence listed above, there is a more potent argument still for the inclusion of all these species in one genus. Genera are figments of the human mind and not realities of nature. As such they are of great convenience to taxonomists in showing relationships, in illustrating how we think

the evolution of the group has taken place in the past, and in keeping the group of species within workable bounds. Unless the creation of a new genus will help the taxonomist in some such manner, there is no justification for its erection. If, however, we base genera not primarily upon convenience, but merely upon differences, then the only logical conclusion is that each species must be placed in a different genus.

In the problem under consideration, we have a small number of species which are extremely closely allied not only structurally but also ecologically. They form a distinct, compact, phylogenetically and biologically well isolated group within the family to which they belong. To separate this group into two genera would not only obscure the relationships of these species to each other but would also tend to obscure the familial relationships.

Further, as shown above, the only differences available for the separation of this group of species into two genera are not valid. Even if they were valid, we still would lack means of separating the nymphs.

Thus from all points of view, i.e., legalistic, structural, ecological, and theoretical, we must conclude that *Polymitarcys* is a synonym of *Ephoron*.

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TACHYTRECHUS STUDIES (DOLICHOPODIDAE, DIPTERA)*

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The following report includes a key to the males of North American *Tachytrechus* and descriptions of two apparently undescribed species.

KEY TO MALES OF NORTH AMERICAN TACHYTRECHUS

1. Antennal arista normal, pointed, without terminal lamella 9
   Arista long, with a terminal lamella 2
2. Arista with one lamella at tip, another at middle ..... *binodatus* Loew.
   Arista with lamella at tip only 3
3. Femora entirely yellow 4
   Femora yellow with black markings or entirely black 7
4. Fore femora without unusual hairs below 5
   Fore femora with long, straight or curled hairs on lower or outer surface 6
5. Lower orbital cilia pale; lamella of arista nearly as broad as long, rounded at tip ..... *moechus* Loew.
   Orbital cilia wholly black; lamella of arista about one and one-half times as long as wide, the white area at base narrow and nearly as long as rest of lamella ..... *tenuiseta* Greene.

*Contribution from the Department of Entomology, Utah Agricultural Experiment Station.

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6. Hair on outer surface of fore femora crinkly; lamella of arista large, white area at base triangular; fore tarsi wholly yellow ..... *auratus* Aldrich.
Fore femora with only straight hairs below; lamella of arista small, white area at base crescent-shaped; fore tarsi wholly black *bipunctatus* Greene.
7. Front femora broad at base, possessing a large jet black spot covering nearly the whole of outer surface; lamella of arista scarcely whitish at base ..... *olympiae* Aldrich.
Front femora broad at base, with an elongate-oval, jet black spot near middle (fig. 3); lamella of arista black, except for a large crescent-shaped white area at base above (fig. 4) ..... *utahensis* n. sp.
Front femora broad at base, scarcely infuscated on outer surface; lamella of arista large (fig. 5) with apical half black, basal half white except for slight narrow infuscation near the stem ..... *tahoensis* n. sp.
Front femora not broadened at base, entirely yellow, or femora entirely blackish-green with tips yellow 8
8. Hind femora black at base below; bristles on anterior surface of fore tibiae longer than the row of bristles on outer-posterior surface, the latter row of bristles of decreasing length, those at base much longer than those near distal end ..... *sanus* Osten Sacken.
Hind femora slightly or not at all blackened at base below; bristles of anterior surface of fore tibiae not longer than the row of bristles on outer-posterior surface, the latter row of bristles of nearly equal length throughout ..... *spinitarsis* Van Duzee
Femora greenish-black, their tips yellowish; fore tibiae yellow, broadened on distal two-thirds, fringed below with flattened, black bristles ..... *laticrus* Van Duzee.
9. Wings without a black spot at apex 10
Wings with a black spot near the apex 12
10. Antennae wholly black 11
Antennae yellow, somewhat infuscated at tip; fore tibiae noticeably swollen, with three long bristles on outer, posterior surface ..... *protervus* Melander.
11. Legs wholly black; hind tibiae with two flattened bristles on posterior side near middle ..... *angustipennis* Loew.
All femora blackish-green except for apical fourth; tibiae yellow; middle tarsus with second joint flattened ..... *granditarsus* Greene
12. Black spot at apex of wing long, narrow below, the white spot at wing tip narrow; orbital cilia wholly black ..... *simulatus* Greene.
Black spot nearly round; no white spot at wing tip but merely a very narrow hyaline margin; orbital cilia white, except a few upper ones ..... *floridensis* Aldrich.
White spot at wing tip nearly two-thirds the size of black spot; upper orbital cilia black, lower cilia white ..... *vorax* Loew.
White spot of wing tip never exceeding one-third the area of black spot 13
13. Black spot at wing apex not extending above third longitudinal vein; white spot very small; wing pointed at tip ..... *volitans* Melander.
Upper edge of black spot meeting wing margin midway between tips of second and third longitudinal veins; white spot large; wing broad, rounded at tip ..... *rotundipennis* Greene.

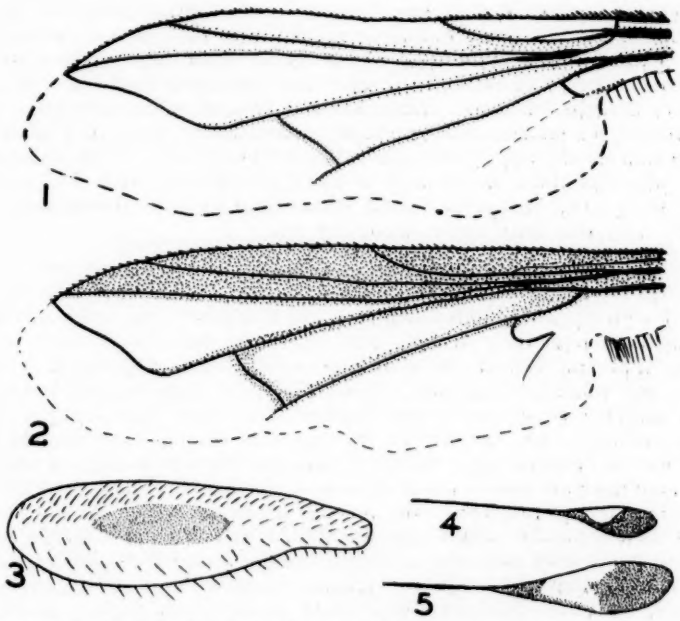
Tachytrechus utahensis n. sp.

Male. Length 6.5 mm.; of wing 4.8 mm. Face narrow immediately below antennae, thickly covered with bright golden pollen; proboscis black; palpi dark brown bearing fine black hair and lightly dusted with yellowish pollen; antennae yellow; first joint large with a black stripe along upper outer edge and covered with short, stiff black hairs, second joint small, yellow, third joint

small, decumbent, black on apical half; arista black, about one and one-half times length of face, lamella (fig. 4) at tip with an elliptical white spot on upper side near base; front black with bluish reflections, especially along the orbits; ocellar bristles black, hair near proboscis whitish.

Thorax dark metallic green; pleurae with golden pollen; scutellum flattened, its reflections more coppery. Abdomen dark metallic green, lightly dusted with golden pollen; hairs of abdomen entirely black; hypopygium rather long and large, dark green lightly dusted with whitish pollen; lamellae yellow, of normal size for this genus, covered and fringed with blackish hairs.

Fore coxae yellow, a few tiny scattered hairs on their anterior surface and about 9 black bristles on lower corner; middle and hind coxae black, lightly dusted with grayish pollen, the latter with one large bristle on outer surface



Figs. 1, 3, 4. *Tachytrechus utahensis* n. sp., male.
Figs. 2, 5. *Tachytrechus tahoensis* n. sp., male.

near its middle; femora yellow; fore pair (fig. 3) broadened, with an elongate-oval blackened spot near the middle showing both on inner and outer surfaces; middle femora slightly blackened at base on posterior side; hind femora wholly yellow; middle and hind femora each with one preapical bristle; tibiae yellow, fore pair blackened at tip and for one-half their length on inner margin; middle tibiae with tip scarcely blackened, hind tibiae distinctly blackened at tip; tarsi entirely black; fore tarsi lightly dusted with white pollen giving them a silvery appearance in certain lights; joints of fore tarsi as 11-5-4-3-3; of middle tarsi as 30-11-10-9-8; hind tarsi as 23-23-15-10-6. Calypters and halteres pale yellow, cilia of the former black.

Wings (fig. 1) narrow, without spot at tip, grayish hyaline, slightly brownish along costal margin and veins; last section of fourth vein bent near its basal third; third and fourth veins approaching each other near the tips;

last section of fifth vein about one-third the length of crossvein; wing considerably broadened basally from tip of fifth vein.

Female. Length 5.5 mm. Face wider than in male, covered with white pollen; antennae more slender, third joint entirely black, arista plain; coxae wholly black, the general body color much darker than in male; fore and middle femora black except apical one-fourth; hind femora black on basal one-half; fore and middle tibiae black except extreme base; hind tibiae blackened except basal one-third; wings broader than in male.

Described from 2 males and 2 females taken at Torrey, Utah, August 2, 1939, and 2 males and 3 females from the same locality, August 20, 1939, by G. F. Knowlton and F. C. Harmston. *Holotype* male and *allotype* female deposited in the United States National Museum; *paratypes* in the Utah Agricultural Experiment Station insect collection.

Taxonomy. The male of *Tachytrechus utahensis* would run to *T. olympiae* Aldrich (in the Greene key, Proc. U. S. Natl. Mus. 2412, Vol. 60 Art. 17) differing, however, in the following points: The fore femora of *utahensis* are more slender and a black spot which covers nearly the entire outer surface of the fore femora in *olympiae* is small and oblong in *utahensis.* The lamella of arista is small, somewhat triangular and entirely black in *olympiae* whereas in *utahensis* the lamella is much larger, somewhat oblong, with a white crescent-shaped spot on the upper side near its base. The females of the two species are much alike but differ in coloring of the legs. The females of *utahensis* have wholly black tibiae except for narrow yellow basal portions; the tibiae of *olympiae* females are yellow with apical one-fourth black.

Tachytrechus tahoensis n. sp.

Male. Length 6.8 mm.; of wing 4.8 mm. Face narrow in the middle, covered with brownish pollen which gives it a velvety appearance; palpi concolorous with face, their surfaces with tiny black hairs; front black, its central portion appearing velvety; the pollen of the face extending but little above the base of the antennae; antennae yellow; first joint large, second vestigial, third small, rounded at tip, somewhat infuscated at apex; arista nearly twice the length of face, black, slender, its tip widening into a large lamella (fig. 5), whose base is tapering, apex rounded, apical half black, basal half white except for a small blackish infuscation near the base; orbital cilia wholly black.

Thorax metallic black, the dorsum somewhat violet, its anterior region dulled with brownish pollen; pleurae dulled with brownish pollen; scutellum more greenish with one pair of large scutellar bristles outside of which is a pair of small, hair-like bristles. Abdomen metallic black with greenish-bronze reflections, incisures black with long black bristles; hypopygium metallic black, its lower surface more greenish, dulled with whitish pile; lamellae yellow, their surfaces with black hairs, those near margin being longer and slightly hooked at tip.

Fore coxae yellow, narrowly darkened at base and on posterior surface, its anterior surface with brownish pollen and tiny black hairs and the usual bristles at tip; middle and hind coxae black, dulled with brownish pollen, the latter coxae with a large bristle on outer surface; femora yellow, the fore pair with an oblong, infuscated area near their middle region on inner surface; middle and hind femora darkened at base, especially below, each with a single preapical bristle; tibiae yellow, fore pair blackened below on apical two-thirds middle pair considerably thicker than fore and hind pairs; tibiae without unusual bristles except the lower surface of middle tibiae are densely covered with short, coarse bristles; tarsi wholly black, fore pair about one-half length of their tibiae, their inner surfaces with white pollen which appears silvery in certain lights; middle pair slightly more than one-half length of corresponding tibiae, the basitarsi spinulose below; hind tarsi same length as their tibae, last three

joints slightly brownish pollinose; calypters and halteres yellow, cilia of the former coarse and black.

Wings (fig. 2) grayish hyaline, without a spot at tip, but with brownish infuscations in front of third vein and along fourth and fifth veins and crossvein; last section of fifth vein about one-third the length of crossvein, its tip evanescent.

Female. Face wider than in male, silvery white pollinose; all coxae black, the tips of the fore and middle pairs yellowish; fore femora black on basal three-fourths, middle and hind femora black on basal half, the apical portions of all femora reddish yellow; middle and hind femora each with one preapical bristle; all tibiae black; wings broader than in male, less infuscated; general body color more greenish metallic than in the male.

Described from two males and seven females (one of the latter with abdomen missing) taken at Tahoe, California, June 19 and 30, 1927, by Dr. J. M. Aldrich. This material was lent by, and types returned to the United States National Museum.

Taxonomy. Tachytrechus tahoensis n. sp. is much like *T. sanus* O. S. in general outward appearance and color of legs; however it is much larger, the lamellae of antennae are larger and rounded at tip (truncate in *sanus*), middle tarsi are wholly black with basitarsi spinulose below; the middle basitarsi in *sanus* are yellow, black only at tip and without bristles. The females of *tahoensis* are much larger and have wholly black middle tibiae, while those of *sanus* possess middle tibiae yellow with apical third black.

Tachytrechus spinitarsis Van Duzee

This species, described from a single male (Pan-Pacific Ent. 1:43, 1924) taken in Tulare County, California, does not appear from the literature to have been collected since. Examination of the type in the California Academy of Sciences insect collection indicates this to be definitely distinct from *T. sanus* O. S. which is common over Utah, Idaho, Colorado, Washington, California and Nevada. *Tachytrechus sanus* differs in having two rows of strong bristles on the lower anterior surface of the middle femur, *spinitarsis* having but a single row. Both species are alike in having yellow posterior tibiae. The base of the middle femora is distinctly infuscated on the lower surface in *sanus*, rather than entirely yellow as in *spinitarsis*.

A KEY TO THE SPECIES OF PTINIDAE OCCURRING IN DWELLINGS AND WAREHOUSES IN CANADA (COLEOPTERA).*

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The following key and descriptive notes have been prepared in an endeavor to lessen the difficulties involved in the identification of the various species of Ptinid beetles that occur, usually as pests of stored products, in dwellings and warehouses in Canada. For a number of years, Mr. H. E. Gray of the Division of Entomology has been collecting these beetles from flour sheds and other types of warehouses throughout Canada. Most of the material on which the key is based was supplied by Mr. Gray, and much of the data on the distribution of several of the species is a result of Mr. Gray's observations.

In their list of insects associated with stored grain and cereal products throughout the world, Cotton and Good (1937, U. S. Dept. Agr. Misc. Publ. 258) include fourteen species of Ptinidae. Eleven of these have been taken in

*Contribution from the Division of Entomology (Systematic Entomology), Department of Agriculture, Ottawa.

Canada, and Mr. Gray has collected an additional species which I have ventured to describe as new. Two species, *Epauloecus unicolor* Piller and *Ptinus latro* Fab., are reported here for the first time from North America. The only species included in the Cotton and Good list and recorded from North America which is not included in the following key is *Gibbium psylloides* Czemp. This species has been reported from a number of localities in southern United States and from New York City and may be found eventually in Canada. It is said to be entirely glabrous above; otherwise it possesses the characters given for *Mezium americanum* Lap. in the first couplet of the key.

It is probable that the species described below as new has been imported into North America, as have all of the other species. I have restored the name *ocellus* Brown to the species known in the literature as *Ptinus tectus*. All of the species are well characterized, and the key should not prove difficult to use except with badly rubbed specimens of the genus *Ptinus*. Additional descriptive matter will be found in Fall's revision of the Ptinidae (1905, Trans. Am. Ent. Soc., XXXI, 99) which considers seven of the species.

KEY TO THE SPECIES

1. Elytra widely embracing the abdomen and about three times as wide as the latter, polished and impunctate, entirely glabrous or with sparse, erect setae near the suture; all other body parts and appendages completely concealed by the pale yellow vestiture ..... 1. *Mezium americanum* Lap.
   Elytra less widely embracing the abdomen, only slightly wider than the latter, with distinct vestiture, with rows of punctures which are sometimes concealed by the vestiture; the pronotal vestiture never much closer than that of the elytra ..... 2.
2. Prothorax, viewed from above, subcircular, not constricted before the base. Integuments concealed by the vestiture. Front, between the antennae, flat and wide. Scutellum not evident ..... 2. *Trigonogenius globulus* Sol.
   Prothorax strongly constricted before the base 3
3. Integuments entirely concealed by the pale golden vestiture. Front flat between the antennae. Posterior trochanters extending to the elytra ..... 3. *Niptus hololeucus* Fald.
   Sculpture of the dorsum never entirely concealed by the vestiture 4
4. Front flat between the antennae. Each elytral interval with several rows of setae. Posterior trochanters attaining the elytra. Scutellum not or scarcely evident ..... 4. *Epauloecus unicolor* Pill.
   Front cariniform between the antennae 5
5. Posterior trochanters attaining the elytra. Scutellum small and indistinct, almost vertical, not extending between the elytra ..... 5. *Eurostus alienus* n. sp.
   Posterior trochanters not attaining the elytra. Scutellum moderately large, very distinct, lying in the same plane as and between the elytra 6
6. Elytral intervals with a rather dense covering of prostrate hairs. Vestiture of the scutellum similar in color to that of the elytra ..... 6. *Ptinus ocellus* Brown
   Elytra without dense vestiture, usually with sub-basal and subapical patches of white scales, each interval with a single row of hairs. Scutellum conspicuous, with closely placed, prostrate, white or pale yellow hairs. Species strongly characterized by having strong secondary sexual characters, long antennae, and large eyes. Males with the elytra elongate, subparallel, a little wider posteriorly, with distinct humeral umbones; with the antennae fully as long as the body; and with the eyes very large and convex. Females with the elytra oval, without humeri; with the antennae four-fifths as long as the body; and with the eyes large but smaller and less convex than in males 7

7. Each elytron with a sub-basal and a subapical patch of appressed, elongate, white scales 8
Elytra without white scales; each elytron with a subhumeral patch of appressed, very pale yellow hairs in the female of *brunneus* 11
8. Pronotum with a large, very dense, strongly elevated brush of hairs on each side of the median line on the sub-basal declivity; the median line between and before the brushes and a small area on each side before each brush polished and without sculpture or vestiture ..... 8. *raptor* Sturm.
Pronotum usually with hair clusters but without strongly elevated brushes and without polished, unsculptured areas 9
9. Hairs of all the elytral intervals equal in length, semi-erect in the female, very strongly inclined in the male 10
Hairs of the alternate elytral intervals much longer, the hairs of all intervals suberect in both sexes ..... 7. *villiger* Reit.
10. Pronotum with an elongate cluster of densely placed hairs on each side of the median line on the sub-basal declivity ..... 9. *fur* L.
Pronotum with its hairs regularly distributed and not more dense on any part ..... 10. *bicinctus* Sturm.
11. Usually pale reddish-brown or reddish-yellow; females with a patch of appressed hairs on the humeral region of each elytron and with the elytra less elongate, their width fully equal to two-thirds their length ..... 11. *brunneus* Duft.
Usually reddish-brown; females lacking appressed elytral hairs and with the elytra more elongate, their width equal to three-fifths their length; hairs of pronotum and elytra coarser than in allied species 12. *latro* Fab.

1. **Mezium americanum** Laporte

Length 2.1–3.5 mm.; width 1.3–1.8 mm. Elytra ovoid, very convex and somewhat inflated posteriorly, dark reddish-brown, the integuments of the other body parts and appendages completely concealed by the pale yellow vestiture. Except on the thorax, the vestiture forming a dense crust, with larger, elongate scales, these appressed on the appendages, erect on the lower surface; prothoracic vestiture forming a deep, dense mat with numerous erect, hair-like scales; the mat strongly costate on each side of the median line, elevated on each side at the middle, and with a fine, deep constriction before the base.

Antennae nine-tenths as long as the body. Elytra polished, without evident sculpture, usually with no vestiture except a few long, erect, stout setae in the scutellar region; fresh specimens with similar setae sparsely distributed over the elytra except on the sides, the setae becoming progressively shorter and feebly clavate posteriorly.

Femora neither strongly nor abruptly clavate.

This species is said to be almost cosmopolitan. It has been reported from numerous localities in eastern United States and from California. In Canada, it has been collected only in the eastern provinces where it is found occasionally in dwellings and warehouses. It is represented in the Canadian National Collection by specimens from the following localities: St. John, N. B., Quebec and Montreal, Que., Ottawa and Guelph, Ont.

2. **Trigonogenius globulus** Solier

Length 2.6–3.9 mm.; width 1.7–2.3 mm. Elytra much less convex than in the other very robust species. Integument dark brown but entirely concealed by the vestiture, the latter yellowish-brown except as noted below.

Antennae scarcely more than half as long as the body, the shortest segments very slightly longer than wide. Pronotum with the sides strongly, almost evenly rounded; covered with a deep, very dense and woolly mat of hairs and except near the base, supplied with long, sparse, brown or blackish hairs which

are inclined caudally; the mat (but not the pronotum) rather broadly sulcate on the median line, the sulcus rather feeble except near the base. Elytra with the sides strongly rounded; with dense, closely appressed, hair-like scales, these all yellowish-grey on the basal declivity except on an elongate basal area on each side of the suture and on a similar area on the humeri where they are black, elswhere the disk variably and irregularly marmorate with pale and blackish scales; the elytra with rows of brown or black, erect hairs which arise from the strial punctures; the hairs very unequal in length in all specimens studied, this probably due to breakage. Denuded specimens showing fine strial punctures and wide, flat, shining intervals.

Femora rather wide, not abruptly clavate.

This species has been reported from many countries. In North America, it seems to be confined largely to the Pacific region. It has been reported from several localities in California and from Oregon, Washington, New York, and British Columbia. In Canada it has been taken only at Victoria and Vancouver, B. C., where it sometimes occurs in warehouses in large numbers.

3. **Niptus hololeucus** Faldermann

Length 3.4—4.1 mm.; width 1.9—2.6 mm. Easily recognized by the vestiture which is pale golden and which completely conceals the integument, it consisting of closely appressed, rather stout, very dense hairs and longer, very slender, sparse, semi-erect hairs. Thorax before the constriction and the elytra globose.

Antennae two-thirds as long as the body, each intermediate segment at least twice as long as wide. Integument pale reddish-brown, shining. Pronotum without distinct sculpture, the semi-erect hairs inclined toward the median line. Elytral striae represented by rows of fine punctures; each puncture bearing an almost prostrate hair. Elytral intervals flat, very wide; each supplied with a single row of semi-erect hairs as well as with the prostrate vestiture, each of the hairs subequal in length to the width of an interval and slightly longer than a strial hair.

Femora strongly clavate, each rather abruptly widened near its middle.

This almost cosmopolitan species is said to breed in stored products of many kinds. It occurs occasionally, but not often, as a pest of households and warehouses in Canada and northern United States. It was taken first in America at Halifax, N. S., in 1899 and was found subsequently at Montreal, Que., London, Ont., and Boston, Mass. (see Gibson, 1924, Can. Ent., LVI, 74-76). It has been reported at Butte, Mont. Additional localities, represented by specimens in the Canadian National Collection, are St. John, N. B., Calgary, Alta., and Fernie and Victoria, B. C.

4. **Epauloecus unicolor** Piller

Length 2.2—2.8 mm.; width 1.3—1.5 mm. Body form much as in *N. hololeucus* Fald. but with the pronotal disk less convex and with the sub-basal angles before the prothoracic constriction less broadly rounded. Integuments reddish-brown. Vestiture consisting of rather coarse, golden hairs.

Head very finely and densely alutaceous, opaque, the sculpture almost concealed by the closely appressed hairs. Antennae two-thirds as long as the body, the intermediate segments only slightly longer than wide.

Pronotum shining, roughly and very densely punctate, the sculpture somewhat obscured by the hairs; the latter close, decumbent; some of them, on each side of the median line and on each side before the constriction, semi-erect, this usually causing the median line to appear sulcate and the sub-basal angles to appear tumid.

Elytra shining; the sides strongly rounded; the striae represented by rows of deep, coarse punctures behind each of which is a prostrate hair; intervals

subequal in width to the striae, each supplied with two or three rows of prostrate hairs and a single row of semi-erect hairs; all hairs of the elytra equal in length, the length of each subequal to the width of an interval.

Femora not strongly clavate.

The species has been placed in *Niptus* Boiel. and *Tipnus* Thoms. by some authors. The latter is a synonym of *Epauloecus* Muls. and Rey, and *crenatus* Fab. is a synonym of *unicolor* Pill. This species is widely distributed in Europe where it is said to occur in buildings and in old wood. It has not been recorded previously from America. Mr. H. E. Gray took three specimens in 1938 in warehouses at Truro, N. S., and at St. John and Fredericton, N. B.

5. **Eurostus alienus** n. sp.

Length of holotype 2.7 mm., width 1.5 mm.; length of paratypes 2 to 3 mm. Body form much as in *Niptus hololeucus* Fald. and *Epauloecus unicolor* Piller Integuments reddish-brown. Vestiture consisting of very fine, sparse, golden hairs.

Head very finely and densely alutaceous, opaque; the vestiture closely appressed, not concealing the surface. Antennae two-thirds as long as the body; the segments a little more elongate than in *E. unicolor,* less elongate than in *N. hololeucus,* segments two to ten equal length, the width of each equal to about two-thirds the length.

Pronotum with the sides almost evenly rounded before the constriction; the disk lacking tumidities and grooves, much less convex than in *N. hololeucus,* the form as in *E. unicolor* but with the sub-basal angles before the constriction less prominent; the pronotum widened behind the constriction as in *N. hololeucus.* Pronotum subopaque, very finely and densely alutaceous and sparsely and very finely granulate; the granules better defined on the sides but not distinct except with high magnification. Pronotal hairs sparse, inclined and curved toward the median line.

Elytral subglobose, the form as in *N. hololeucus,* the sides strongly and somewhat variably rounded; the width of the elytra equal to 70 per cent of their length in the holotype and many of the other males, this varying from 68 to 72 per cent in males and from 72 to 76 per cent in females. Elytral striae not impressed, each consisting of a row of fine punctures; each puncture bearing a prostrate hair. Elytral intervals polished, flat; each several times as wide as a stria and supplied with a single row of hairs; the hairs semi-erect, the length of each subequal to the width of an interval and slightly greater than the length of a strial hair.

Metasternum and abdomen shining, with moderately coarse, very feebly impressed, and very indistinct punctures; the hairs appressed and close; the metasternum and first three abdominal segments often broadly and feebly concave in males, flat in females. Femora not strongly clavate, their form much as in *E. unicolor.*

Holotype—♂, Ottawa, Ont., June 27, 1939 (H. E. Gray); No. 5038 in the Canadian National Collection, Ottawa.

Allotype—♀, same data.

Paratypes—30, same data; 4, St. John, N. B., April 23, 1938 (H. E. Gray); 1, Windsor Mills, Que., May 14, 1936 (H. E. Gray); 1, Kamloops, B. C., Nov. 3, 1939 (H. E. Gray).

The sexes are not always separable by the abdominal and elytral characters described above. The variation in elytral width appears to be heterogonic as well as sexual; larger specimens have the elytra relatively wider than do smaller individuals of the same sex. All of the specimens were collected in warehouses in which quantities of cereals were stored.

6. **Ptinus ocellus** Brown

Length 2.5—3.6 mm.; width 1.3—1.7 mm. Without secondary sexual characters; the body robust; the elytra with the sides subparallel and with distinct humeral umbones. Vestiture consisting of very fine, pale reddish-brown hairs, these dense but not entirely concealing the sculpture except on the abdomen; the elytra without scales. Integuments reddish-brown, shining throughout.

Antennae two-thirds as long as the body, the width of each intermediate segment equal to three-fifths its length. Eyes strongly convex, much smaller than in our other species of *Ptinus*. Pronotum neither sulcate nor tuberculate, coarsely and densely punctate; the vestiture consisting of short, prostrate hairs and longer, semi-erect hairs which are directed caudally and which are lacking on the median line; the sub-basal declivity with a bright spot on each side due to directed hairs. Elytral striae represented by rows of rather fine punctures; the intervals wide and flat, covered with rather dense, appressed hairs, each with a single row of longer, strongly inclined hairs.

Femora neither strongly nor abruptly clavate.

Under the name *tectus*, this cosmopolitan species has been recorded as occurring in a great variety of stored products. A summary of its distribution and habits and a bibliography have been given by Hatch (1933, Bull. Brook. Ent. Soc., XXVIII, 200). The species was first found in America by Mr. W. Downes who collected the type series from fish meal at Victoria, B. C., in 1927 and 1928. It was taken at Seattle, Wash., in 1930 and 1932 by Hatch (loc. cit.) and at Salinas, Cal., in 1932 (1933, Jour. Ec. Ent., XXVI, 734). More recently, Mr. H. E. Gray has found it abundant and widely distributed in the warehouses of British Columbia and has found it infesting warehouses in Truro, N. S., St. John, N. B., and Keewatin, Ont.

There has been considerable confusion in regard to the nomenclature of the species. *Ptinus pilosus* was named and described by White in 1846 (Zool. of the Voy. of Erebus and Terror, Insecta, 8). In 1856, Boieldieu (Ann. Ent. Soc. France (3), IV, 652) noted that *pilosus* White was preoccupied by *Ptinus pilosus* Müller, 1821, and offered the new name *tectus* for White's species, at the same time redescribing the species. But Boieldieu based the redescription on a Ptinid, and Blair has found that *pilosus* White is an Anobiid belonging to the genus *Dorcatoma* (1928, Jour. F. M. S. Mus., Kuala Lumpur, VIII, 175). Under article 31 of the International Rules of Nomenclature, the name *tectus* Boiel. cannot be used for the Ptinid, and the only name available for the latter appears to be *ocellus* Brown (1929, Can. Ent., LXI, 109). According to Beare (1904, Ent. Mo. Mag., XL, 5), Bedel compared British specimens of the present species with the Boeildieu Ptinid, the so-called "type" of *tectus*, and found them identical. Thus the present species came to be known in Europe as *tectus* and came to be considered of Tasmanian origin, the Boieldieu specimen being Tasmanian and the earliest example of the species known.

7. **Ptinus villiger** Reitter

This species can be recognized immediately by the vestiture of the elytral intervals, the hairs on the alternate intervals being very long, about twice as long as the hairs on the other intervals. In the males of *villiger*, these hairs are suberect as in the females; in all of the other species that bear any resemblance to *villiger*, the hairs are suberect in the females but are strongly inclined or almost prostrate in the males. The pronotal vestiture of *villiger* is like that of *bicinctus*.

This species has been reported from Germany, Asia, from several countries of eastern Europe, and from numerous localities in Canada and northern United States. In Canada it occurs commonly in warehouses from coast to coast.

8. **Ptinus raptor** Sturm.

This species is strongly characterized by the brushes and impunctate areas of the pronotum which are described in the key. In *fur,* the pronotum bears hair clusters which are smaller and not strongly elevated, but the strongly polished, unsculptured areas, so distinct in *raptor,* are not to be observed in *fur.* In females of *raptor* the hairs of the elytral intervals are somewhat unequal in length; in females of *fur,* all of these hairs are of equal length and are shorter than the longer hairs of *raptor.* There appear to be no other differences between these species.

Ptinus raptor is said to be widely distributed in Europe. The only published record of its occurrence in America is that of Schaffer who in 1931 reported its occurrence at Brooklyn, N. Y. (Bull. Brook. Ent. Soc., XXVI, 175). It was first taken in Canada by Mr. M. L. Prebble who found a specimen at St. Peters, N. S., in 1930. Mr. H. E. Gray has found the species widely distributed in New Brunswick and Nova Scotia and the most abundant Ptinid in the warehouses of those provinces. The species has been taken in warehouses in Montreal, Que., and Toronto, Ont., but it has not been found west of the latter city and is seldom taken west of the Maritime Provinces. The Canadian National Collection contains specimens taken at Bar Harbor, Me., in 1933 by Dr. A. E. Brower and others taken in 1936 at Port Blanford, Nfld.

9. **Ptinus fur** Linnaeus

This species may be recognized by the hair clusters of the pronotum which are described in the key. These clusters are better developed in females than in males but are distinct in both sexes. Females might possibly be confused with *raptor* and males with *bicinctus;* the separating characters are not difficult to appreciate and are described in the notes concerning those species.

The species is said to be widely distributed in Europe and Asia. It has been recorded from many localities in the United States. In southern Canada, it occurs from coast to coast in dwellings and warehouses but seems to be more abundant in British Columbia than in the other provinces.

10. **Ptinus bicinctus** Sturm.

This species can be distinguished from *fur* only by the character of the pronotal vestiture. In *bicinctus* the hairs are evenly distributed over the surface of the pronotum. When the pronotum is viewed from behind, the hairs are seen to form four prominent, pointed tufts in *bicinctus* as in allied species. But the tufts are formed entirely by the direction, not by the density, of the hairs. The pronotal vestiture of *bicinctus* is like that of *villiger* which differs in the vestiture of the elytral intervals.

This species is said to be widely distributed in Europe and to occur in northern Africa. It is rarely taken on this continent, but it has been reported from Toronto, Ont., Tyngsboro, Mass., and from Nebraska. The Canadian National Collection contains specimens taken in warehouses or dwellings at Cannes and Block House, N. S., at Montreal and Covey Hill, Que., Ottawa, Ont., and at Medicine Hat, Alta.

11. **Ptinus brunneus** Duftschmid

In this species, the average size is rather small, and the color is usually paler than in fully colored examples of any of the allied species. Our specimens measure from 2.3 to 3.4 mm. Males are reddish-yellow, and the females are usually pale reddish-brown. The females are more rubust than those of allied species and can be recognized immediately by the appressed hairs of the humeral region which are not scale-like and neither wider nor coarser than the other hairs of the elytra. The pronotal vestiture resembles that of *bicinctus;* the hairs form four tufts but are evenly distributed over the disk.

The species is said to be nearly cosmopolitan, and it has been reported from many localities in the United States. It is rarely taken in Canada; all of the specimens in the Canadian National Collection were taken in warehouses at Toronto and Kingsville, Ont., and at Lunnenburg, N. S.

There is some confusion in regard to the nomenclature of this species. Some European authors substitute the prior name *testaceus* Olivier, 1790, for *brunneus* Duftschmid, 1825. But *testaceus* Olivier is preoccupied by *testaceus* Thunberg, 1784, and *brunneus* Duftschmid by *brunneus* Linnaeus, 1790. As I am unable to settle the matter, I have used the familiar name for the species.

12. **Ptinus latro** Fabricius

This species, previously unreported from America, is known to us from eight females, two found in a Montreal warehouse in 1937 and 1939 and six collected in warehouses at Toronto in 1940. In these specimens, the elytra are considerably more elongate than in females of *brunneus* and slightly more elongate than in females of the allied species. All of the hairs of the pronotum and elytra are distinctly coarser than in any of the allied species, and the hairs of the elytral intervals are of equal length. The pronotal hairs form four tufts but are evenly distributed over the disk as in *brunneus*. As the species measures from 3 to 4 mm., it is probable that males of *latro* and *brunneus* can be separated by the larger average size as well as by the dark color and coarse vestiture of the former.

DESCRIPTION OF A NEW SPECIES OF LACCORNIS, WITH A KEY TO THE NEARCTIC SPECIES (COLEOPTERA, DYTISCIDAE) *

BY HUGH B. LEECH,
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The North American species were discussed by Fall (1923), under the name *Agaporus* Zimmermann (1919:192). However, as has been pointed out by Giugnot and F. Balfour-Browne, *Agaporus*, with *Hydroporus oblongus* Stephens as its type, is a synonym of *Laccornis* Des Gozis (1914:111). Des Gozis proposed *Laccornis* as a subgenus of *Hydroporus*, with *H. oblongus* as the type and only species mentioned.

There has been some dissension as to the characters by which the genus should be recognized. Zimmermann relied chiefly upon the shape of the metacoxal lobes, the weakly produced scutellar lobe of the pronotum, the shape of the prosternal process, and the structure of the male genitalia. Fall discussed these and other characters, pointing out that the undersurface is finely strigate, and that the metafemora attain the hind coxal lobes, as in *Copelatus*, *Agabus*, etc. F. Balfour-Browne has investigated the subject, basing his conclusions on the genotype, *oblongus;* he stresses chiefly the form of the prosternal process (both that part posterior to the front coxae and anteriorly where it merges into the prosternum proper), the hind margin of the pronotum, and the general form and punctation of the species.

During the present short study I have examined all the described nearctic species, as well as *oblongus* from England, and *lugubris* (Aubé) from Montevideo, but I have not seen *copelatoides* (Sharp) of Chile nor *breviusculus* Gschwendtner of Hungary. It is evident at once that the form of the male genitalia cannot be used as a generic character, since though quite unlike those of any *Hydroporus* known to me, both the aedeagi and parameres differ greatly amongst the species of *Laccornis*. The male secondary sexual characters (enlarged antennal segments, toothed or twisted anterior protarsal claws, posterior fimbria-

*Contribution from the Division of Entomology, (Forest Entomology), Dominion Entomological Laboratory, Vernon, B. C.

tion of the meso- and metafemora) do not occur in all species. In *lugubris* the abdominal sternites are non-strigate, and the posterior margin of the pronotum has the scutellar lobe as well formed as in such species of *Hydroporus* as *signatus* Mann., *sinuatipes* Fall, *dorsalis* (Fab.), and *palustris* (Fab.), thus invalidating these two characters for a generic synopsis. Hence the fact that the metafemora attain the metacoxal lobes, as noted by Fall, seems to be the best way to separate *Laccornis* from *Hydroporus* and allies.

The following species has been confused with *conoideus* (Leconte), but can be separated at once by the elytral punctation, and the structure of the male genitalia. All specimens seen are from British Columbia west of the Rocky Mountains, so the species may well occur in the State of Washington.

Laccornis pacificus n. sp.

Male. Length 5.0 mm., width 2.3 mm. Body elongate, attenuated behind, moderately convex, shining, very finely alutaceous dorsally. Head reddish-brown, paler anteriorly; pronotum dark reddish-brown, paler laterally, anterior angles yellowish-brown, posterior angles darker; elytra reddish-brown, progressively paler towards the sides which are yellowish-brown; antennae yellowish-brown, segments three to eleven tinged with piceous apically; body beneath piceous, the legs, prosternal process anteriorly, metacoxal processes, and abdominal sternites laterally, rufous.

Head slightly more than two-thirds as wide as pronotum; punctation fine, unequal both in size and distribution; surface very finely reticulate. Antennae with segments three broadened but narrower than four, five to seven also broadened but progressively less so, these five segments flattened and alutaceous beneath.

Pronotum almost one-third as long as broad, widest at base, scutellar lobe broadly rounded; lateral marginal bead narrow; surface finely, sparsely punctate, more coarsely and closely so laterally and basally; anterior transverse series of punctures clearly defined.

Elytral outline continuous with that of pronotum, widest at basal third, thence attenuated posteriorly; surface extremely finely reticulated, punctation coarse, the punctures fairly evenly distributed, separated by about twice their own diameters and with a few fine punctures scattered between them.

Prosternum concave medially, the process (behind the front coxae) oval, weakly, evenly convex in profile, broadly rounded apically; narrowly but strongly margined laterally, less distinctly so toward apex, with a series of setae-bearing punctures just within the marginal line; prosternal process with a definite prominence midway between the fore coxae, thence declivous and flattened anteriorly, the declivity without transverse rugae. Metacoxal plates rather coarsely, irregularly punctate, abdominal sternites finely strigate laterally, last visible sternite finely reticulate and punctate in apical half, with a median, longitudinally oval flattened area which has a single coarse puncture on each side at the middle. Anterior protarsal claws a little thicker and shorter than their fellows, with a prominent acute median tooth; mesofemora with a dense row of long golden setae along posterior margin, extending from the trochanters to apical three-quarters; metafemora with a brief row of sparse short setae. Male genitalia: parameres: see figure 6; aedeagus: figures 4 A, B, C.

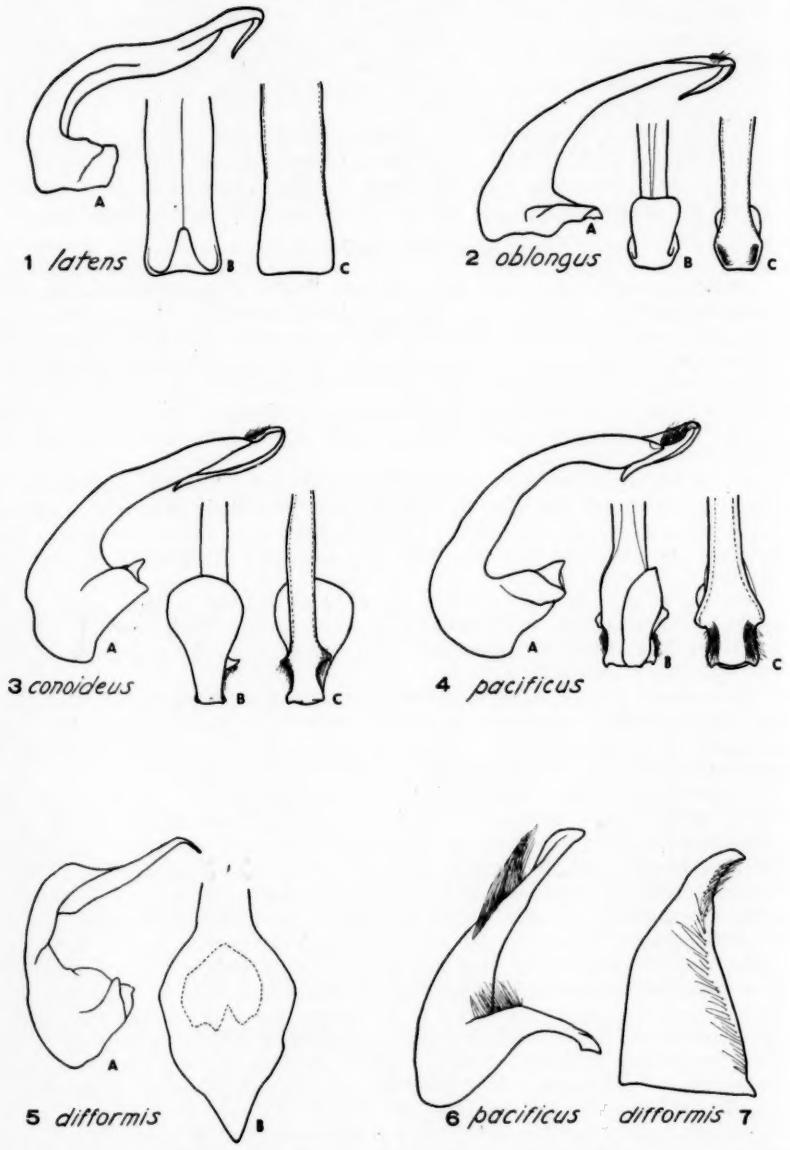
Female. Similar to the male except as follows: elytra less strongly attenuated apically, the punctation a little finer; anterior protarsal claws simple; femora not ciliate posteriorly.

Holotype. ♂, Salmon Arm, B. C., May 24, 1937 (H. Leech); stream. No 5053 in the Canadian National Collection, Ottawa.

Allotype. ♀, same data. In the Canadian National Collection.

Paratypes. 23 ♂♂, 29 ♀♀, Salmon Arm, B. C., May 24, 1939 (Huga

PLATE VIII.



Figures 1-5: median lobes or aedeagi of the male genitalia of several species of *Laccornis*.
A—profile of aedeagus. Following F. Balfour-Browne (1938:10, footnote 5), the upper or convex side of each figure is considered to be the true ventral side.
B—apical third of aedeagus, dorsal view.
C—same, ventral view.
Figure 6: right paramere of *L. pacificus*, outer side.
Figure 7: same, *L. difformis*.
All drawings are to the same scale.

Leech), pond; 13 ♂♂, 4 ♀♀, same data, July 2; 2 ♂♂, Salmon Arm, B. C., October 7, 1934 (Hugh Leech), in soil, dried up pond; 2 ♀♀, Vernon, B. C., September 13, 1939 (Hugh Leech), pond, Aberdeen Mtn., 6,000 feet; 1 ♂, Lumby, B. C., September 20, 1939 (H. B. Leech), cold spring; 1 ♂, Summerland, B. C., June, 1936 (A. N. Gartrell); 1 ♂, Midday Val., Merritt, B. C., July 12, 1925 (K. F. Auden); 2 ♂♂, Copper Mtn., B. C., October 3, 1929 (G. Stace Smith). Paratypes will be distributed as follows: Canadian National Collection, and Messrs. C. A. Frost and G. Stace Smith, 4 ♂♂, 4 ♀♀; 2 ♂♂ and 2 ♀♀ each, to the British Museum (Nat. Hist.), Museum of Comparative Zoology, California Academy of Sciences (Ent.), Illinois State Nat. Hist. Survey Collection, Cornell University, and Messrs. J. Balfour-Browne, J. B. Wallis, R. Hopping; remainder in the author's collection.

L. pacificus is most closely allied to *conoideus* (Leconte) and the European *oblongus* (Stephens), but is readily distinguished from both by the coarse elytral punctation and the shape of the male genitalia. Very little variation has been noted; in some males the seventh antennal segment is less expanded than in others, and the punctation of the last sternite is variable. Specimens taken early in the season are somewhat teneral and a good deal lighter in color than those collected in the fall which may have aestivated; however, the paratype from Midday Valley has the elytra yellowish-brown thoroughout, though it is not at all teneral; in some examples the elytra are paler basally. Similar variations in color have been noted in *conoideus* and *latens*.

KEY TO THE NEARCTIC SPECIES OF LACCORNIS

1. Metacoxal plates often subrugose, distinctly punctate, the punctures a little finer than those of elytra; males with elytra more attenuated posteriorly, with anterior protarsal claws strongly and acutely toothed at middle, with meso- and metafemora ciliate posteriorly, and with antennal segments three to seven broadened 2

   Metacoxal plates finely strigate, very finely and sparsely punctate, or both; males with elytra more attenuated than in females, or not; anterior protarsal claws of males broadened and contorted, meso- and metafemora not ciliate posteriorly (except *difformis*), antennal segment four somewhat broadened and elongated 3

2. Elytra coarsely and rather evenly punctate, with a few very small punctures intermixed; aedeagus of male genitalia with a reflexed, ligulate tip (fig. 4). Known only from west of the Continental Divide ..... *pacificus* n. sp.

   Elytra moderately coarsely punctate, the large punctures rather sparse and irregular, the small ones numerous and well defined; aedeagus of male genitalia with a reflexed flatly spatulate tip (fig. 3). Known only from east of the Continental Divide ..... *conoideus* (Leconte)

3. Elytra extremely finely punctate, strongly attenuated posteriorly in both sexes; color flavotestaceous ..... *deltoides* (Fall)

   Elytra coarsely punctate, moderately attenuated behind, more strongly in the males; color rufous to rufopiceous 4

4. Larger species (average of 11 specimens, 5.83 x 2.74 mm.); pronotum reddish-brown at least discally, little or not at all darker than the head or elytra; metafemora of males ciliate along posterior margin ..... *difformis* (Leconte)

   Smaller species (average of 6 specimens, 5.42 x 2.57 mm.); pronotum piceous, darker than head or elytral base; metafemora of males not ciliate posteriorly ..... *latens* (Fall)

Laccornis conoideus (Leconte)

H [*ydroporus*] *conoideus* Leconte, 1850, *in* Agassiz's Lake Superior, Part 2, Sec. 4, p. 216.

Type locality: Eagle Harbour, Lake Superior. Type in the Leconte Collection at the Museum of Comparative Zoology, Cambridge, Mass. Specimens examined: 16 males and 22 females, representing the following localities: *Alberta*: Edmonton; *Manitoba*: Winnipeg, Churchill; *Ontario*: Prince Edward County, Merivale, Ottawa; *Quebec*: Covey Hill, Aylmer; *Massachusetts*: Lexington, Tyngsboro; *Michigan; New York*: Ithaca; *Wisconsin*: Milwaukee. Fall mentions Minnesota. Parameres of male genitalia of the same type as in *pacificus* (fig. 6) and *oblongus*.

Laccornis pacificus Leech

Type locality: Salmon Arm, B. C. Type number 5053 in the Canadian National Collection. Specimens examined: 44 males, 36 females; see list of paratypes.

At the time of Fall's paper (1923), the species of *Laccornis* were considered to be rare, and the majority of specimens seem to have been collected by Mr. J. D. Sherman, Jr., but since then two species have been taken in considerable numbers; Messrs. J. B. Wallis and W. J. Brown have collected many *conoideus* in Manitoba, and I have found *pacificus* locally common in British Columbia. The majority of my examples were taken in a small, shallow, weedy pool, locally known as Norton's pond. This pond is ephemeral, being present in the spring and early summer, and occasionally in the fall; it is merely a hollow in a roadside meadow, and entirely lacks trees or shade. On May 24, 1939, the warm, shallow water swarmed with Dytiscidae and Hydrophilidae and their larvae, as well as tadpoles and various small crustaceans*; the *Laccornis*, mostly teneral, were numerous in the shallowest and weediest parts. On July 2 there was barely a quart of murky water in the hollow, and only a few *pacificus* were found, these being under a small log embedded in the damp soil. The species has a considerable range of habitats, however, since specimens have been taken in a small stream (Salmon Arm, elev. 1,170 feet), a cold spring (Lumby), and in a muddy vegetationless pool (Vernon: Aberdeen Mtn., 6,000 feet); Mr. Stace Smith writes that his two paratypes are from a pool at an elevation of 4,300 feet.

Laccornis latens (Fall)

Agaporus latens Fall, 1937, Ent. News, 48:10.

Type locality: Sherborn, Mass. Type in the Fall Collection, Museum of Comparative Zoology, Cambridge, Mass. Specimens examined: 5 males, 1 female, including two topotypes (both teneral). Localities: *Massachusetts*: Sherborn; *New York; Quebec*: La Trappe; Fall lists New Hampshire.

Dorsal punctation very similar to that of *pacificus;* aedeagus with a reflexed triangular tip (fig. 1); parameres subtriangular, slightly hairy along the dorsal margin and at the apex; fourth antennal segment of the males slightly broader and longer than the third or fifth.

Laccornis difformis (Leconte)

H [*ydroporus*] *difformis* Leconte, 1855, Proc. Acad. Nat. Sci. Phila., 7:298.

Type locality: Georgia. Type in the Leconte Collection at the Museum of Comparative Zoology, Cambridge, Mass. Specimens examined: 3 males, 8 females, all from *New York*: Peekskill. Fall gives also Massachusetts, Virginia, Indiana and Michigan. Tip of aedeagus a little bent dorsally, not reflexed (fig. 5); parameres (fig. 7) subtriangular, broader than in *latens;* fourth antennal segment of the males obviously broader and longer than the third or fifth.

*Chiefly Ostracoda.

Laccornis deltoides (Fall)

Agaporus deltoides Fall, 1923, Rev. North Am. Spp. Hydroporus and Agaporus, p. 123.

Type locality: Beaver Creek, Illinois. Type in the Fall Collection, at the Museum of Comparative Zoology, Cambridge, Mass. Specimens studied: one male paratype. Unfortunately the specimen is imperfect, and lacks the abdominal tip and genitalia.

This is our most distinctive species; the large size (6.25 to 6.6 mm.), pale colour, fine punctation, and the strongly deltoid elytra of both sexes distinguish it at once. The prosternal process, and the anterior protarsal claws of the males, resemble those of *latens* more than *difformis;* the fourth antennal segment in that sex is elongate, nearly parallel-sided, and definitely concave ventrally.

Laccornis oblongus (Stephens).

Hydroporus oblongus Stephens, 1835, Ill. Brit. Ent. Mandib., 5:437.

Through the kindness of Mr. J. Balfour-Browne, I have been able to study a pair of British specimens from the Sharp Collection. *L. oblongus* resembles *conoideus* in elytral and metacoxal punctation, but can be separated easily by the more oblong and less attenuated outline and the thickened but not dentate anterior protarsal claws of the males. Segments three to seven of the male antennae are only very slightly larger than those of the female.

Upon comparing my sketches of the male genitalia (fig. 2) with those given by Guignot (1933, p. 421, figs. 278-280), a discrepancy is at once apparent; Guignot (fig. 278) shows a fringe of hairs around the end of the aedeagus just at the base of the recurved tip, while I find them to form a short row on each side. The parameres are much as in *conoideus* and *pacificus.*

Laccornis lugubris (Aubé).

Hydroporus lugubris Aubé, 1838, Sp. General des Hydrocanthares et Gyriniens, p. 604.

I have studied a pair (Montevideo, the type locality) from the Sharp Collection. The species is undoubtedly a *Laccornis,* though very distinct from any yet known in the nearctic fauna. In the male, the antennae are entirely simple, the anterior protarsal claws are only two-thirds the length of their fellows, and the femora are not ciliate posteriorly. The parameres are much like those of *difformis.* but the aedeagus is very distinctive, being narrow, elongate, and curved, with a large membranous structure projecting on each side from before the middle to near the apex. The elytral punctation is much like that of *conoideus.*

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ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA

The thirty-ninth annual meeting of the Entomological Society of British Columbia was held at the Grosvenor Hotel, Vancouver, B. C., on Saturday, February 24, 1940. There were thirty-five members present from Washington and British Columbia. Among those attending from the United States were Dr. M. H. Hatch of the University of Washington and Mr. G. W. Getzendaner of the U. S. Bureau of Entomology and Plant Quarantine.

Eighteen papers were presented covering a diversified range of entomological subjects. Those of special importance were "The European Pine Shoot Moth" by W. G. Mathers, "A Survey of the Rat Fleas in the Vicinity of Vancouver, B. C., With Relation to Plague Studies" by G. P. Holland, "The Use of Oil Sprays for Grasshopper Control in British Columbia" by E. R. Buckell, and "Larval Studies of the Codling Moth" by A. D. Heriot. A most entertaining paper was that by G. J. Spencer on "The Speed of Insect Flight".

An informal dinner was held in the evening attended by thirty members and wives. Afterward C. W. Getzendaner and J. D. Gregson displayed some exceptionally good natural colour photography, both as moving pictures and slides.

BOOK NOTICE

COMPENDIUM OF ENTOMOLOGICAL METHODS. Published by Ward's Natural Science Establishment Inc., Rochester, N. Y. 1940.

As pointed out in the foreword to Part 1, this is the first of a series of papers on methods of collecting various groups of insects. Each paper of the series is to be contributed by an authority on the particular group. It is planned to publish these papers in serial form as time and conditions permit and possibly in book form when the series is complete. The sections will be mailed free to amateur and professional entomologists requesting them from Ward's Natural Science Establishment.

Part I, Collecting May Flies (Ephemeroptera), by Jay R. Travers, Ph. D., Massachusetts State College, contains approximately six double-columned pages of text matter and seven illustrations. The general features of the life cycle of May flies, collecting and preserving nymphal stages, rearing, the winged stages, and the preservation of winged stages are simply but adequately discussed for the general entomologist.

This series of leaflets should be of use to entomologists and particularly to those building up a representative collection of insects or desiring to specialize in a particular group.

R. H. Ozburn

Mailed Saturday, June 29th, 1940.

Guelph Printing Service